

CANADA-ALBERTA FLOOD DAMAGE REDUCTION PROGRAM

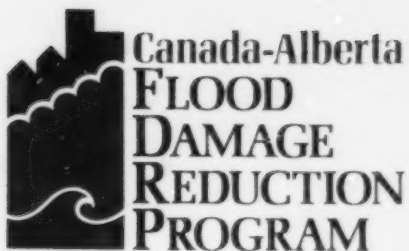
ANNUAL REPORT 1990-91



Environment
Canada

Environnement
Canada





The Honourable Jean J. Charest
Minister
Environment Canada
OTTAWA, ON

The Honourable Ralph Klein
Minister
Alberta Environment
EDMONTON, AB

Ministers:

I am pleased to submit the second Annual Report of the Canada-Alberta Flood Damage Reduction Program Steering Committee. The report outlines the work completed under the program during the fiscal year 1990/91.

Sincerely yours,

A handwritten signature in black ink, appearing to read "Ron Deeprose", written in a cursive style.

Ron K. Deeprose
Chairman
Steering Committee



Environment
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Canada

Alberta
ENVIRONMENT

EXECUTIVE SUMMARY

The Canada-Alberta Flood Damage Reduction Program Agreement was signed on April 5, 1989. This agreement initiated a program of flood risk mapping and floodplain designation in over 50 urban communities across Alberta where a flood hazard has been identified. The program has a total budget of \$5.5 million to be shared equally between Canada and Alberta. The mapping component of the agreement expires on March 31, 1994.

During this second year of the program, work was carried out at 23 communities. Cross section surveys and base map production were the major activities, however some hydraulic analysis reports were initiated. The flood risk areas of Cochrane, Medicine Hat and St. Albert were designated. These were the first designations under the program.

Total expenditures were \$800,254.

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1.0 INTRODUCTION

Canada and Alberta signed "An Agreement Respecting Flood Damage Reduction and Flood Risk Mapping in Alberta" in April 1989. This Agreement initiated the Canada-Alberta Flood Damage Reduction Program (FDRP). The program is based on the premise that the best way to reduce the financial toll of flood damage disaster assistance payments is to discourage inappropriate new development in the floodplain. This is accomplished by identifying flood risk areas on a suitable map and, in cooperation with the communities, designating these areas.

The Flood Damage Reduction Agreement contains components on policy, flood risk mapping, and flood damage reduction measures to be carried out within the time frame and funding limits provided for in the Agreement. It provides for an extensive program of flood risk mapping and the designation of flood risk areas in those communities mapped. Policies discouraging future flood vulnerable development come into effect on designation, and remain in effect following termination of the Agreement.

The Agreement terminates on March 31, 1998, but the majority of the funding for the mapping component is scheduled to be spent by March 31, 1994, followed by four years of reduced funding for a maintenance program. The total shareable costs of the Agreement is limited to \$5,500,000 of which each party's share is \$2,750,000 or 50% of the total, whichever is less.

This, the second annual report reviews the activities and progress of the Canada-Alberta Flood Damage Reduction Program (FDRP) during the period April 1, 1990 to March 31, 1991.

2.0 ORGANIZATION

Under the terms of the Agreement a Steering Committee, consisting of two members appointed by the Minister of the Environment for Canada and two members appointed by the Minister of the Environment for Alberta, provides direction for the program and reports to the ministers annually.

The Technical Committee established under the Agreement consists of two members representing Environment Canada and three members representing Alberta Environment. The Technical Committee supervises and conducts the technical components of the work plan and reports to the Steering Committee.

A Public Information Subcommittee coordinates the public information component of the program. This group is responsible for preparing public information materials and for organizing public meetings and open houses. It includes members from Alberta Environment and Environment Canada and reports directly to the Steering Committee.

Steering Committee

Members of the Steering Committee in 1990-91 were:

Canada

Mr. Robert A. Halliday (Chair)
Director
Western and Northern Region
Inland Waters Directorate
Environment Canada
Regina, Saskatchewan

Mr. Ralph L. Pentland
Director
Water Planning and Management
Inland Waters Directorate
Environment Canada
Ottawa, Ontario

Alberta

Mr. R. Bruce MacLock
Director
Planning Division
Alberta Environment
Edmonton, Alberta

Mr. Ron K. Deeprise
Director
Technical Services Division
Alberta Environment
Edmonton, Alberta

Meetings of the Committee were held on April 27, 1990, and November 15, 1990. In accordance with the guidelines established in the Flood Damage Reduction Agreement, Canada chaired the Committee and provided secretarial support during 1990-91.

Technical Committee

Members of the Technical Committee in 1990-91 were:

Canada

Mr. G. Felton
Water Planning and Management
Inland Waters Directorate
Environment Canada
Regina, Saskatchewan

Mr. B. Aitken
Water Planning and Management
Inland Waters Directorate
Environment Canada
Regina, Saskatchewan

Alberta

Mr. M. Quazi (Chair)
River Engineering Branch
Technical Services Division
Alberta Environment
Edmonton, Alberta

Mr. P. Valentine
Survey Branch
Technical Services Division
Alberta Environment
Edmonton, Alberta

Mr. R. Bothe
Hydrology Branch
Technical Services Division
Alberta Environment
Edmonton, Alberta

The Technical Committee held four meetings during 1990-91.

Public Information Program Committee

The Public Information Program Subcommittee members in 1990-91 were:

Alberta

Mr. A. Lamb (Chair)
Planning Division
Alberta Environment
Edmonton, Alberta

Mr. B. Hill
Communications Division
Alberta Environment
Edmonton, Alberta

Canada

Ms. S. A. Peets
Communications Division
Environment Canada
Edmonton, Alberta

The Public Information Program Subcommittee held a number of informal meetings throughout the year and attended all Steering and Technical Committee meetings to report on the progress of the program.

3.0 METHODOLOGY

The flood risk mapping program has several components. These are surveying and mapping, hydrologic analysis, hydraulic analysis and public information map preparation.

The surveying and mapping component consists of aerial photography, reconnaissance, horizontal control surveys, cross-section surveys for the hydraulic analysis and the preparation of an orthophoto map, usually at a scale of 1:5,000 with a one metre contour. The base mapping contracts are conducted under the specifications established in Schedule C of the Agreement.

Contract administration and inspection is provided by Survey Branch, Alberta Environment for the Technical Committee.

Hydrology studies are undertaken to determine the magnitude of the 1:100 year flood. This is the design flood identified in the Agreement and is the standard used in Alberta for flood risk mapping of the majority of the communities. For some communities the design flood may also have to account for the effects of ice and/or debris. The hydrologic analyses are completed under the direction of the Technical Committee in accordance with specifications set out in Schedule B of the Agreement.

The hydraulic analysis consists of the calculation of the water surface profile for the 1:100 flood using the HEC-2 computer model. The flood risk areas are plotted on detailed topographic maps and are divided into two zones: the floodway and the flood fringe. The floodway consists of the channel and the adjoining overbank area required to carry a majority of the floodwater. The flood fringe includes areas of the floodplain where the flood waters are shallower (less than 1 m) and slower moving (less than 1 m/sec). The hydraulic analysis are completed under the direction of the Technical Committee in accordance with the specifications set out in Schedule B of the Agreement.

The Steering and Technical Committees consult with local government officials to ensure local awareness of the intent and implications of the program. The location of the flood lines is reviewed with local officials to seek their support in implementing the policies of the program.

Once the flood risk areas are established they are reviewed by local governments and, upon agreement by the community, Ministers of the Environment are asked for their approval of the designation. Public information maps and brochures are then prepared.

4.0 PUBLIC INFORMATION PROGRAM

Section 3(c) of the Canada-Alberta Flood Damage Reduction Agreement specifies that Canada and Alberta "will ensure the provision of adequate information on the extent of flood risk areas within Alberta through ...the dissemination of such information to interested agencies and individuals". A public information program was initiated to achieve these goals. Its primary objectives are:

1. To explain the intent of the Flood Damage Reduction Program and recommended floodplain designations to all audiences.
2. To promote stakeholder involvement in response to the designations.
3. To promote the use of flood risk mapping information for improved decision making in community and regional planning.

The goal of the public information program is to inform floodplain residents about designation and its implications. The information program is directed at all residents and property owners in the flood risk area and to local governments who are responsible for implementing and enforcing land use regulations within the flood risk areas. The program also provides information to provincial and federal elected representatives and government departments responsible for implementing the policies required by the designation of the flood risk areas.

All affected property owners are notified in advance of the designation and open houses are held to explain the program and related policies. Materials available for the open houses and general distribution are the program brochure, display, program video, flood information maps, and community specific brochures or fact sheets.

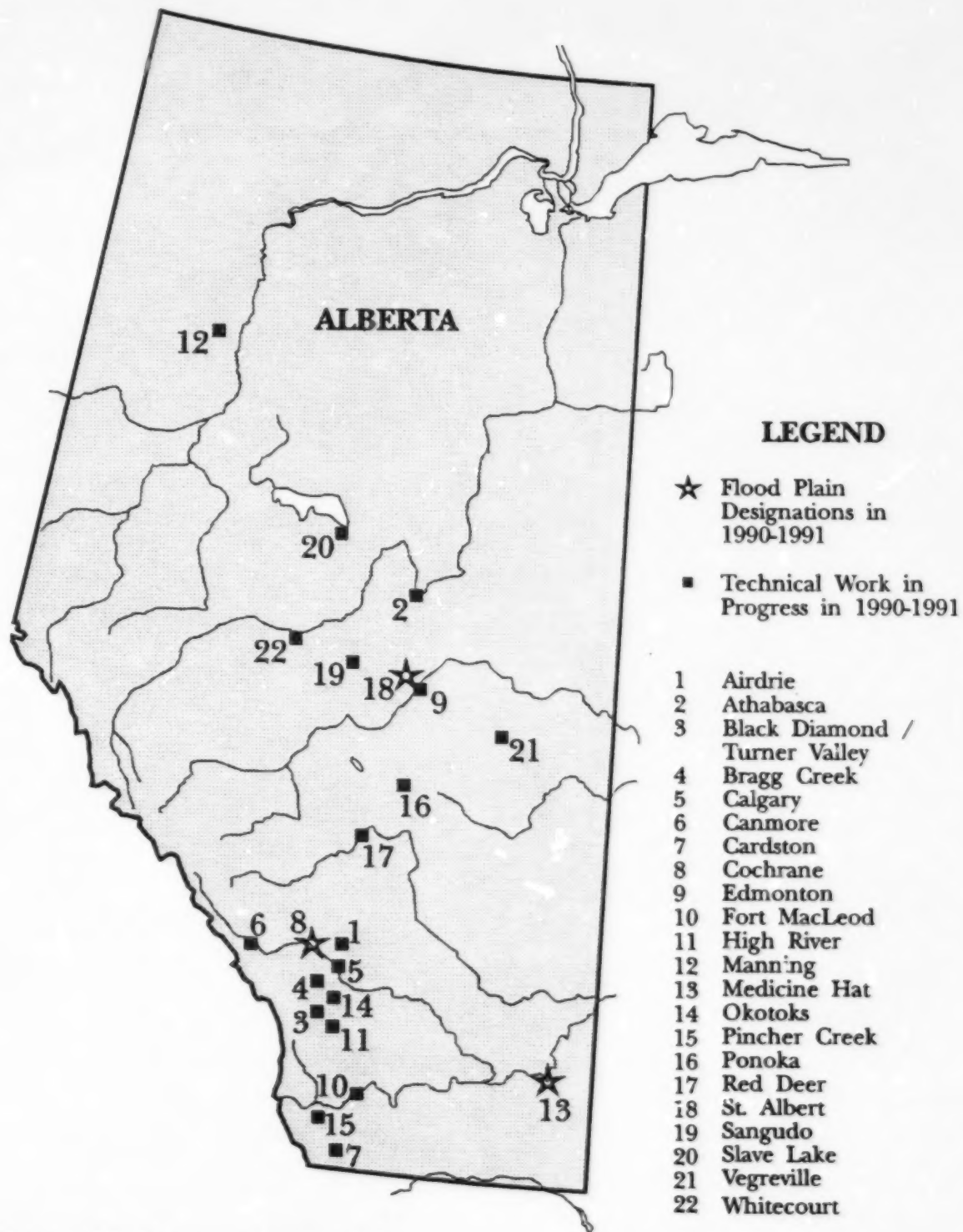


Figure #1 Community Locations

5.0 1990-1991 WORK PROGRAM

General

The 1990/91 fiscal year ~~was~~ the second year of the Agreement and work program. Base map preparation was the major work effort with the overall coordination for this component provided by the Survey Branch of Alberta Environment with the assistance of two project managers; one for projects in the Red Deer area and north, and one for projects in the area south of Red Deer.

The hydraulic analysis and report preparation were coordinated by the River Engineering Branch of Alberta Environment. Major studies were initiated for Airdrie, Red Deer, and Slave Lake.

The communities of Cochrane, Medicine Hat and St. Albert were designated.

Figure 1 indicates the communities active under the program in 1990-1991. The following is a brief report on the communities under study in 1990-91.

Airdrie

The hydraulic study report was completed to draft stage by Environment Canada. Flood levels have been reviewed and tentatively approved by the Technical Committee.

Athabasca

Orthophoto mapping was completed. The river cross section survey was 80% completed. A draft hydrology report was completed under contract by Environment Canada.

Black Diamond/Turner Valley

Cross section surveys that were started in 1989/90 were completed.

Bragg Creek

Cross-section surveys that were started in 1989/90 were completed.

Calgary

Several meetings were held with local officials to finalize the flood hazard maps. Minor adjustments were made to the floodway to ensure it was uniform throughout the city. The Stampede Grounds and Earlton areas were reassessed and agreement reached on floodway location.

Canmore

Survey reconnaissance and placing of monuments and targets for aerial photography were completed. Weather conditions prevented the completion of aerial photography. A draft hydrology report was completed by Alberta Environment. Two additional tributaries downstream of the town were added to the report because of planned development in this area.

Cardston

Aerial photography, control surveys and orthophoto mapping were completed. Cross section surveys were 60% completed.

Cochrane

The flood risk maps based on the 100 year ice jam event on the Bow River were finalized and an addendum to the 1986 study report was completed. The community was designated on January 17, 1991. A public information map and fact sheet were prepared and distributed. An open house was held on designation day. Designation day aerial photography was taken.

Edmonton

The reconnaissance, selection and marking of cross sections were completed; 50% of the cross sections were surveyed prior to freeze-up.

Fort MacLeod

The existing hydraulic study report was updated to reflect a two zone flood risk area. The flood risk maps were presented to local officials on January 9, 1991.

Fort McMurray

A review of the ice jam frequency was initiated by Alberta Environment and a revised report will be completed next year.

High River

Cross section surveys and orthophoto mapping were completed.

Manning

Cross section surveys were completed. Targets for aerial photography were set but photography was not completed due to unfavourable weather conditions. A draft hydrology report was completed by Alberta Environment.

Medicine Hat

Flood risk maps were presented to city officials on April 4, 1990. The maps were finalized and an addendum to the 1986 study report was completed. The city was designated on February 12, 1991. A public information map and brochure were prepared and distributed, and designation day aerial photography obtained. An open house was held in Medicine Hat on February 27, 1991.

Okotoks

Additional ground surveys that were requested by the town were completed. These surveys were used to initiate an update of the hydraulic study report. The updating of the report will be completed next year.

Pincher Creek

Control and cross section surveys were initiated during the year. The surveys will be completed in 1991. A draft hydrology study report was completed by Alberta Environment.

Ponoka

Cross section and control surveys and orthophoto mapping were completed. The hydrology report was completed by Alberta Environment.

Red Deer

The cross section surveys and orthophoto mapping that were initiated in 1989 were completed. The hydraulic study report for the Red Deer River was approximately 50% completed by WER Engineering Ltd. Work on the hydraulic study report for Waskasoo Creek was initiated by Alberta Environment.

St Albert

The hydraulic study report was completed by Alberta Environment. The public information map and fact sheet were completed and distributed. The city was designated on January 16, 1991 and an open house was held. Designation day photography was completed.

Sangudo

Cross section and control surveys and orthophoto mapping were completed.

Slave Lake

The hydraulic analysis was completed based on existing conditions and preliminary flood risk maps prepared. The completion of the study was delayed until the investigation into proposed flood mitigation works (improvements to existing flood by-pass channel) at Slave Lake is completed.

Vegreville

Cross section and control surveys were initiated and were 50% complete at the end of the year.

Whitecourt

The orthophoto mapping initiated in 1989 was completed and a small extension to the mapping coverage was made. The hydraulic analysis was completed and preliminary maps were presented to town officials on December 19, 1990 and to the Town Council on February 11, 1991. The town is reviewing the maps that are based on the historic 1943 ice jam event and further work is being deferred until formal response from the town is received.

6.0 PROGRAM EXPENDITURES

1990-91 expenditures are indicated in Table 1.

An historical summary of expenditures is indicated in Tables 2 and 3. The financial administration is provided by Alberta Environment with the costs shared equally by Canada and Alberta.

Table 1
1990/91 Program Expenditures

Community	Surveying and Mapping	Hydrology	Hydraulics	Total
Airdrie	2 100	3 545	20 535	26 180
Athabasca	64 989	5 307	186	70 482
Black Diamond Turner Valley	34 907			34 907
Bragg Creek	22 191		344	22 535
Calgary			227	227
Canmore	12 862	10 080		22 942
Cardston	38 224	1 247		39 471
Cochrane	9 483		64	9 547
Edmonton	40 678			40 678
Fort MacLeod			7 770	7 770
Fort Vermilion			455	455
High River	145 400			145 400
Manning	15 161	2 906		18 067
Medicine Hat	12 300		1 533	13 833
Okotoks	4 320		3 118	7 438
Pincher	18 240	4 593		22 833
Ponoka	39 685	4 193		43 878
Red Deer	39 608		26 495	66 103
Sangudo	19 392			19 392
Slave Lake			23 339	23 339
St. Albert	14 530		617	15 147
Vegerville	15 152			15 152
Whitecourt	3 450		8 700	12 150
Subtotal	552 672	31 871	93 383	677 926
Public Information				11 225
Project Coordination and Planning				73 925
Land Access				2 801
Courier				1 016
Supplies				5 604
Salary Adjustment				4 810
Report Update Revisions				13 180
Total GST				790 487 9 767

Table 2
Historical Summary
Program Expenditures (Community Specific)

Community	1989/90	1990/91	Total
Airdrie	90 286	26 180	116 466
Athabasca		70 482	70 482
Black Diamond/Turner Valley	65 328	34 907	100 235
Bragg Creek	73 354	22 535	95 889
Calgary	9 910	227	10 137
Canmore		22 942	22 942
Cardston		39 471	39 471
Cochrane	951	9 547	10 498
Edmonton	8 984	40 678	49 662
Fort MacLeod	65 782	7 770	73 552
Fort Vermilion		455	455
High River	109 947	145 400	255 347
Lethbridge	328		328
Manning		18 067	18 067
Medicine Hat	4 776	13 833	18 609
Okotoks	800	7 438	8 238
Pincher Creek		22 833	22 833
Ponoka		43 878	43 878
Red Deer	106 306	66 103	172 409
St. Albert	958	15 147	16 105
Sangudo		19 392	19 392
Slave Lake	48 497	23 339	71 836
Vegerville		15 152	15 152
Whitecourt	154 930	12 150	167 080
Total	741 137	677 926	1 419 063

Table 3
Historical Summary
Program Expenditures (General)

	1989-90	1990-91	Total
Public Information	30 858	11 225	42 083
Project Coordination and Planning	69 568	73 925	143 493
Land Access	4 300	2 801	7 101
Courier	686	1 016	1 702
Supplies	8 378	5 604	13 982
Salary Adjustment		4 810	4 810
Report Update Revision		13 180	13 180
Miscellaneous	1 974		1 974
GST		9 767	9 767
Total	115 764	122 328	238 092